

## 4F-MDMB-BINACA (4F-MDMB-BUTINACA)

### Introduction:

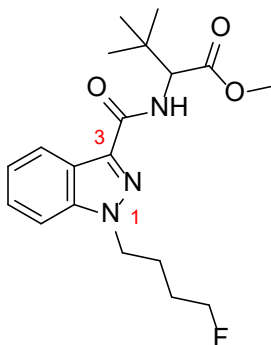
In recent years, various products containing synthetic cannabinoids (e.g., JWH-018, UR-144, AKB48) laced onto plant material have been encountered by law enforcement and are smoked for their psychoactive effects. In response to federal control of these synthetic cannabinoids, a transition to new synthetic cannabinoids laced onto plant material has been observed. 4F-MDMB-BINACA is a synthetic cannabinoid that has been encountered on the designer drug market and has been found laced onto plant material and marketed under the guise of herbal incense products.

### Licit Uses:

4F-MDMB-BINACA has no commercial or medical uses.

### Chemistry:

4F-MDMB-BINACA<sup>1</sup> is classified as an indazole. 4F-MDMB-BINACA is based on an indazole core structure, where the 1- and 3-positions of the indazole ring system are substituted. The 1-position of 4F-MDMB-BINACA is substituted with a linear four carbon chain terminated with a fluorine (F) atom. The 3-position is substituted with an amide linker, and the nitrogen (N) atom of this linker is further substituted with a 1-methoxy-3,3-dimethyl-1-oxobutan-2-yl group. The chemical structure for 4F-MDMB-BINACA is shown below:



### Pharmacology:

Data from preclinical studies show that 4F-MDMB-BINACA binds to and acts as an agonist at the CB1 receptor. In drug discrimination studies in rats, 4F-MDMB-BINACA generalized to  $\Delta^9$ -tetrahydrocannabinol [THC] (i.e., produced subjective effects similar to those of  $\Delta^9$ -THC).

There are no published studies on the safety of 4F-MDMB-BINACA for human use.

### Illicit Uses:

4F-MDMB-BINACA has been encountered in numerous synthetic cannabinoid products that are smoked for their psychoactive effects.

### User Population:

Information on user population in the United States is limited. 4F-MDMB-BINACA abuse is not monitored by any national drug abuse surveys. Poison control centers continue to report adverse health effects in response to the abuse of synthetic cannabinoids, and this abuse is both a public health and safety concern. Serious adverse effects, including death, have been reported following the use of 4F-MDMB-BINACA.

### Illicit Distribution:

The Drug Enforcement Administration's National Forensic Laboratory Information System (NFLIS) Drug database collects scientifically verified data on drug items and cases submitted to and analyzed by participating federal, state, and local forensic drug laboratories. NFLIS-Drug received over 3,900 reports of 4F-MDMB-BUTINACA since its first report in 2018.

### Control Status:

4F-MDMB-BINACA is controlled in schedule I of the Controlled Substances Act.

<sup>1</sup> Chemical name: Methyl 2-(1-(4-fluorobutyl)-1H-indazole-3-carboxamido)-3,3-dimethylbutanoate